



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## Annexure-1

### Proposed Program Structure for Upcoming B.Tech.(EE)-Batch 2025-29

#### Semester I

#### First Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	BSC-1	MTL BS101	Engineering Mathematics-I	3	1	0	4
2.	BSC-2	BTL BS 111	Applied Chemistry	3	0	0	3
3.	BSC-2	BTP BS 111	Applied Chemistry Lab	0	0	2	1
4.	ESC-1	CSL ES101	Introduction to 'C' Programming	3	0	0	3
5.	ESC-1	CSP ES101	'C' Programming Lab	0	0	2	1
6.	ESC-2	MEL ES101	Introduction to Engineering Mechanics	3	1	0	4
7.	SEC-1	EEP SE XXX	Skill Enhancement Basket	1	0	2	2
8.	AEC-1/VAC-1		AEC-1 / VAC-1	x	x	x	2
			Total Credits				<b>20</b>

#### Semester II

#### First Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	BSC 3	MTL BS102	Engineering Mathematics II	3	1	0	4
2.	BSC 4	PHL BS101	Engineering Physics	3	0	0	3
3.	BSC 4	PHP BS101	Engineering Physics Lab	0	0	2	1
4.	DCC-1	EEL DC104	Network analysis & Synthesis	3	1	0	4
5.	DCC-2	EEL DC106	Electrical Measurements and Instrumentation	3	0	0	3
6.	DCC-2	EEP DC 106	Electrical Measurements and Instrumentation Lab	0	0	2	1
7.	AEC-2	EEP AE102	From the AEC basket	2	0	0	2
8.	SEC-2	EEP SE101	From the SEC basket	1	0	2	2
9.	VAC-2		As available from the basket	x	x	x	2
10.	MAK-I	PCL MA 102	Universal Human Value-II				NC
			Total Credits				<b>22</b>

**\*Universal Human Values-II Mandatory NC course**



# Shri Mata Vaishno Devi University

## Faculty of Engineering

### School of Electrical Engineering

#### Semester III

#### Second Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	DCC-3	EEL DC 205	Electromagnetic Field Theory	3	1	0	4
2.	ESC-3	ECL ES 203	Digital Electronics	3	0	0	3
3.	ESC-3	ECP ES 203	Digital Electronics Lab	0	0	2	1
4.	DCC-4	EEL DC 201	Electrical Machines – I	3	0	0	3
5.	DCC-4	EEP DC 201	Electrical Machines Lab - I	0	0	2	1
6.	DCC-5	EEL DC 203	Signal & Systems	3	1	0	4
7.	DCC-6	EEL DC 205	Electronics Devices and circuits	3	0	0	3
8.	DCC-6	EEP DC 205	Electronics Devices and circuits lab	0	0	2	1
9.	SEC-3	EEP SE103	Skill Enhancement Basket	0	0	4	2
10.	PR-1	EEI PR 201	Summer Internship - I	0	0	2	1
11.	VAC-3		Value Added Course Basket	2	0	0	2
			<b>Total Credits</b>				<b>25</b>

#### Semester IV

#### Second Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	DCC-7	EEL DC 202	Electrical Machines - II	3	0	0	3
2.	DCC-7	EEP DC 202	Electrical Machines Lab - II	0	0	2	1
3.	DCC-8	EEL DC 204	Analog Integrated Circuits	3	0	0	3
4.	DCC-8	EEP DC 204	Analog Integrated Circuits lab	0	0	2	1
5.	DCC-9	EEL DC 206	Microprocessors & Microcontrollers	3	0	0	3
6.	DCC-9	EEP DC 206	Microprocessors & Microcontrollers Lab	0	0	2	1
7.	DCC-10	EEL DC 208	Control Systems	3	0	0	3
8.	DCC-10	EEP DC 208	Control Systems Lab	0	0	2	1
9.	BSC-5	EEL DC 212	Numerical Methods and Optimization	3	0	0	3
10.	VAC-4		Environmental studies	2	0	0	2
			<b>Total Credits</b>				<b>21</b>



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## Semester V

## Third Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	DCC-11	EEL DC 303	Power System - I	3	0	0	3
2.	DCC-11	EEP DC 303	Power Systems Lab - I	0	0	2	1
3.	DCC-12	EEL DC 305	Power Electronics	3	0	0	3
4.	DCC-12	EEP DC 305	Power Electronics Lab	0	0	2	1
5.	DCC-13	EEL DC 304	AI and ML in Electrical Engineering	3	0	0	3
6.	DCC-13	EEP DC 304	AI and ML Lab	0	0	2	1
7.	PR-2	EED PR 301	Project Work – I	0	0	2	1
8.	DEC-1	EEE DE XXX	Department Elective - 1	3	1	0	4
9.	DEC-II/GEC-1		Department Elective-II/Generic Elective - 1	3	1	0	4
10.	PR-3	EEI PR 301	Summer Internship – II	0	0	2	1
11.	MAK-III		Universal Human Value-II	2	0	0	NC
			<b>Total Credits</b>				<b>22</b>

## Semester VI

## Third Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	DCC-14	EEL DC 302	Power System - II	3	0	0	3
2.	DCC-14	EEP DC 302	Power System Lab - II	0	0	2	1
3.	DCC-15	EEL DC 306	Electric Vehicles	3	0	0	3
4.	AEC 3	MB BSXXX	Entrepreneurship/Management	3	0	0	3
5.	DEC-3	EEL DE XXX	Department Elective - 3	3	1	0	4
6.	DEC-4/GEC-2	EEL DE XXX	Department Elective –4 / General Elective -2	3	1	0	4
7.	PR-4	EED PR 302	Project Work –II	0	0	4	2
			<b>Total Credits</b>				<b>20</b>



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## Semester VII

## Fourth Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	DCC-16	EEL DC 401	Switchgear & Protection	3	1	0	4
2.	DCC-17	EEL DC 403	Power System Operation & Control	3	0	0	3
3.	PR-5	EED PR 401	Project Work –III	0	0	6	3
4.	PR-6	EEL PR 401	Internship - III	0	0	4	2
5.	DEC-5	EEL DE XXX	Department Elective - 5	3	1	0	4
6.	DEC-6 / GEC-3	EEL DE XXX	Department Elective – 6 / Generic Elective - 3	3	1	0	4
			<b>Total Credits</b>				<b>20</b>

## Semester VIII

## Fourth Year

S. No.	Category	Course Code	Course Title	L	T	S/P	C
1.	PR	EED PR 402/EEI PR 402	Project Work –IV (Major) / Internship	0	0	20	10
			<b>Total Credits</b>				<b>10</b>

### Credits Division

Category	Credits
<b>BSC</b>	<b>19</b>
<b>DCC</b>	<b>66</b>
<b>DEC/GEC</b>	<b>24</b>
<b>ESC</b>	<b>12</b>
<b>AEC/VAC/SEC</b>	<b>19</b>
<b>PR</b>	<b>20</b>
<b>Total Credits</b>	<b>160</b>



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## List of Departmental/School Core Courses (DCC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEL DC104	Network analysis & Synthesis	3	1	0	4
2	EEL DC 102	Electrical Measurements and Instrumentation	3	0	0	3
3	EEL DC 102	Electrical Measurements and Instrumentation Lab	0	0	2	1
4	EEL DC 205	Electromagnetic Field Theory	3	1	0	4
5	EEL DC 201	Electrical Machines – I	3	0	0	3
6	EEL DC 201	Electrical Machines Lab - I	0	0	2	1
7	EEL DC 203	Signal & Systems	3	1	0	4
8	EEL DC 205	Electronics Devices and circuits	3	0	0	3
9	EEL DC 205	Electronics Devices and circuits	0	0	2	1
10	EEL DC 202	Electrical Machines - II	3	0	0	3
11	EEL DC 202	Electrical Machines Lab - II	0	0	2	1
12	EEL DC 204	Analog Integrated Circuits	3	0	0	3
13	EEL DC 204	Analog Integrated Circuits lab	0	0	2	1
14	EEL DC 206	Microprocessors & Microcontrollers	3	0	0	3
15	EEL DC 206	Microprocessors & Microcontrollers Lab	0	0	2	1
16	EEL DC 208	Control Systems	3	0	0	3
17	EEL DC 208	Control Systems Lab	0	0	2	1
18	EEL DC 303	Power System - I	3	0	0	3
19	EEL DC 303	Power Systems Lab - I	0	0	2	1
20	EEL DC 305	Power Electronics	3	0	0	3
21	EEL DC 305	Power Electronics Lab	0	0	2	1
22	EEL DC 304	AI and ML in Electrical Engineering	3	0	0	3
23	EEL DC 304	AI and ML Lab	0	0	2	1
24	EEL DC 302	Power System - II	3	0	0	3
25	EEL DC 302	Power System Lab - II	0	0	2	1
26	EEL DC 306	Electric Vehicles	3	0	0	3
27	EEL DC 401	Switchgear & Protection	3	1	0	4
28	EEL DC 403	Power System Operation & Control	3	0	0	3
<b>Total Credits</b>						<b>66</b>

## List of Basic Science Courses Offered by School (BSC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	MTL BS101	Engineering Mathematics-I	3	1	0	4
2	BTL BS 111	Applied Chemistry	3	0	0	3
3	BTP BS 111	Applied Chemistry Lab	0	0	2	1
4	MTL BS102	Engineering Mathematics II	3	1	0	4
5	PHL BS101	Engineering Physics	3	0	0	3
6	PHP BS101	Engineering Physics Lab	0	0	2	1
7	EEL DC 211	Numerical Methods and Optimization	3	0	0	3
<b>Total Credits</b>						<b>19</b>



# Shri Mata Vaishno Devi University

## Faculty of Engineering

### School of Electrical Engineering

#### List of Engineering Science Courses Offered by School (ESC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	CSL ES101	Introduction to 'C' Programming	3	0	0	3
2	CSP ES101	'C' Programming Lab	0	0	2	1
3	MEL ES101	Introduction to Engineering Mechanics	3	1	0	4
4	ECL ES 203	Digital Electronics	3	0	0	3
5	ECP ES 203	Digital Electronics Lab	0	0	2	1
<b>Total Credits</b>						<b>12</b>

#### List of Ability Enhancement Courses Offered by School (AEC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEL AE102	Electrical Wiring	2	0	0	2
2	EEL AE 104	Fundamentals of Algorithmic logic	2	0	0	2

#### List of Skill Enhancement Courses Offered by School (SEC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEP SE103	Electrical Workshop	0	0	4	2
2	EEM SE 106	Python Programming for Engineers	1	0	2	2
3	EEP SE 104	Electrical Circuit Design and analysis using SIMULINK	1	0	2	2

#### List of Value Addition Courses Offered by School (VAC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEL VA 102	Probability and Random Variables	2	0	0	2
2	EEL VA 104	Mathematical Modelling Using SIMULINK	2	0	0	2
3	EEL VA 101	Introduction to Electrical & Electronics Engineering	2	0	0	2

#### List of Project/Internship (PR) Offered by School

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEI PR 201	Summer Internship - I	0	0	2	1
2	EED PR 301	Project Work – I	0	0	2	1
3	EEI PR 301	Summer Internship – II	0	0	2	1
4	EED PR 302	Project Work –II	0	0	4	2
5	EED PR 401	Project Work –III	0	0	6	3
6	EEI PR 401	Internship - III	0	0	4	2
7	EED PR 402/EEI PR 402	Project Work –IV (Major) / Internship	0	0	20	10
<b>Total Credits</b>						<b>20</b>



# Shri Mata Vaishno Devi University

## Faculty of Engineering

### School of Electrical Engineering

#### List of General Elective Courses Offered by School (GEC)

S. No	Course Code	Course Title	L	T	S/P	Credit
1	EEE DC 101	Fundamentals of Electrical Engineering	3	0	2	4
2	EEE DC 102	Electrical Measuring Instruments & Instrumentation	3	0	2	4
3	EEE DC 204	Analog Electronics	3	0	2	4
4	EEE DC 208	Control Systems	3	0	2	4
5	EEE DC 305	Power Electronics	3	0	2	4
6	EEE DE301	Non-Conventional Energy Resources	3	1	0	4
7	EEE DE303	Electrical Materials	3	1	0	4
8	EEE DEXXX	Power Electronics controlled Drives	3	1	0	4
9	EEE DE311	Sensors & Actuators	3	1	0	4
10	EEE DE304	Advanced Control Systems	3	1	0	4
11	EEE DEXXX	Power Plant Engineering	3	1	0	4
12	EEE DE312	Analog Communication	3	1	0	4
13	EEE DE314	Digital Control Systems	3	1	0	4
14	EEE DE405	Biomedical Instrumentation	3	1	0	4
15	EEE DExxx	Smart metering and Advanced Metering Infrastructure	3	1	0	4
16	EEE DE309	Switched Mode DC-DC Converters	3	1	0	4
17	EEE DE421	Switch Mode Power Supply	3	1	0	4
18	EEE DE xxx	Introduction to Smart grid	3	1	0	4
19	EEE DE xxx	Advanced Power System Protection	3	1	0	4
20	EEE DE xxx	Microgrid Dynamics and Control	3	1	0	4
21	EEE DE 322	Random Variables & Stochastic Techniques	3	1	0	4
22	EEE DE309	Switched Mode DC-DC Converters	3	1	0	4
23	EEE DE308	Design of Solar PV system	3	1	0	4

#### List of Departmental/School Elective Electives (DEC)

S. No.	Course Code	Course Title	L	T	S/P	Credit
<b>Elective – 1</b>						
1	EEE DE301	Non-Conventional Energy Resources	3	1	0	4
2	EEE DE303	Electrical Materials	3	1	0	4
3	EEE DE305	Advance Power Electronics and Control	3	1	0	4
4	EEE DE307	Electrical Machine Design	3	1	0	4
5	EEE DE309	Switched Mode DC-DC Converters	3	1	0	4
6	EEE DE311	Sensors & Actuators	3	1	0	4
<b>Elective – 2</b>						
1	EEE DE302	Special Electrical Machines	3	1	0	4
2	EEE DE304	Advanced Control Systems	3	1	0	4
3	EEE DE xxx	Introduction to Smart grid	3	1	0	4
4	EEE DE308	Design of Solar PV system	3	1	0	4
5	EEE DE310	Power Utilization and Traction	3	1	0	4
6	EEE DE 322	Random Variables & Stochastic Techniques	3	1	0	4



# Shri Mata Vaishno Devi University

## Faculty of Engineering

### School of Electrical Engineering

<b>Elective – 3</b>						
1	EEE DE xx	Line Commutated and PWM Rectifiers	3	1	0	4
2	EEE DE314	Digital Control Systems	3	1	0	4
3	EEE DE316	Electrical motor design	3	1	0	4
4	EEE DE318	Digital Signal Processing	3	1	0	4
5	EEE DE320	Wind and Solar PV system	3	1	0	4
6	EEE DE xxx	Microgrid Dynamics and Control	3	1	0	4
<b>Elective – 4</b>						
1	EEE DE401	Fuzzy Logic and Neural Networks	3	1	0	4
2	EEE DE403	DC Microgrid and Control System	3	1	0	4
3	EEE DExx	Smart metering and Advanced Metering Infrastructure	3	1	0	4
4	EEE Dexx	Electrical Distribution System Analysis	3	1	0	4
5	EEE DE409	Power Quality and FACTS Devices	3	1	0	4
6	EEE DE411	Solar Energy Engineering and Technology	3	1	0	4
<b>Elective – 5</b>						
1	EEE DE413	HVDC Transmission Systems	3	1	0	4
2	EEE DE417	Hydrogen Energy Engineering	3	1	0	4
3	EEE DE419	Modelling and Analysis of Electric Distribution System	3	1	0	4
4	EEE DE421	Smart Grids	3	1	0	4
5	EEE DE423	Electrical Energy Conservation and Auditing	3	1	0	4
6	EEE DE425	Power System Optimization	3	1	0	4



# Shri Mata Vaishno Devi University

## Faculty of Engineering

### School of Electrical Engineering

#### Baskets for Major (Honors) Specializations

#### B. Tech. (Electrical Engineering) with Major Specialization (Honors)

The basket of Courses with two major specializations namely:

1. B. Tech. (Electrical Engineering) with Honor Specialization in Electric Vehicles (EV)
2. B. Tech. (Electrical Engineering) with Honor Specialization in Smart Grids (SG)

#### **Honors in Electric Vehicles**

S. No.	Course Code	Course Title	L	T	P	C	Category
1	EEL DC 202	Electrical Machines - II	3	0	0	3	DCC
2	EEP DC 202	Electrical Machines Lab - II	0	0	2	1	DCC
3	EEL DC 305	Power Electronics	3	0	0	3	DCC
4	EEP DC 305	Power Electronics Lab	0	0	2	1	DCC
5	EEP DC 208	Control Systems Lab	0	0	2	1	DCC
6	EEL DC 306	Electric Vehicles	3	0	0	3	DCC
7	EEE DEXXX	Power Electronics controlled Drives	3	1	0	4	DEC/GEC
8	EEE DE309	Switched Mode DC-DC Converters	3	1	0	4	DEC/GEC
9	EEE DE305	Advance Power Electronics and Control	3	1	0	4	DEC/GEC
10	EEE DE302	Special Electrical Machines	3	1	0	4	DEC/GEC
11	EEE DE308	Design of Solar PV system	3	1	0	4	DEC/GEC
12	EEE DE316	Electrical motor design	3	1	0	4	DEC/GEC
13	EEE DE409	Power Quality and FACTS Devices	3	1	0	4	DEC/GEC
14	EEE DE411	Solar Energy Engineering and Technology	3	1	0	4	DEC/GEC



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## Honors in Smart Grid

S. No.	Course Code	Course Title	L	T	P	C	Category
1	EEL DC 208	Control Systems	3	0	0	3	DCC
2	EEP DC 208	Control Systems Lab	0	0	2	1	DCC
3	EEL DC 303	Power System - I	3	0	0	3	DCC
4	EEP DC 303	Power Systems Lab - I	0	0	2	1	DCC
5	EEL DC 302	Power System - II	3	0	0	3	DCC
6	EEP DC 302	Power System Lab - II	0	0	2	1	DCC
7	EEE DE xxx	Introduction to Smart grid	3	1	0	4	DEC/GEC
8	EEE DE xxx	Advanced Power System Protection	3	1	0	4	DEC/GEC
9	EEE DE xxx	Microgrid Dynamics and Control	3	1	0	4	DEC/GEC
10	EEE DExx	Smart metering and Advanced Metering Infrastructure	3	1	0	4	DEC/GEC
11	EEE DE425	Power System Optimization	3	1	0	4	DEC/GEC
12	EEE DE320	Wind and Solar PV system	3	1	0	4	DEC/GEC
13	EEE DExx	Electrical Distribution System Analysis	3	1	0	4	DEC/GEC
14	EEE DE409	Power Quality and FACTS Devices	3	1	0	4	DEC/GEC



# Shri Mata Vaishno Devi University

Faculty of Engineering

School of Electrical Engineering

## Basket for Minor Specializations

### Minor Specialization in Electrical System (ES)

S. No.	Course Title	Pre-requisites	L	T	P	C	Category	Minor Basket
1	Fundamentals of Electrical Engineering	Mathematics / Physics	3	1	0	4	GEC	ES
2	Switched Mode DC-DC Converters	Fundamentals of Electrical Engineering	3	1	0	4	GEC	ES
3	Electrical Materials	Physics / Fundamentals of Electrical Engineering	3	1	0	4	GEC	ES
4	Design of Solar PV system	Physics	3	1	0	4	GEC	ES
5	Non-conventional Energy Sources	Physics / Fundamentals of Electrical Engineering	3	1	0	4	GEC	ES
6	Electrical Measuring Instruments & Instrumentation	Fundamentals of Electrical Engineering / Physics / Basic Electronics	3	1	0	4	GEC	ES
7	Analog Electronics	BEEE	3	1	0	4	GEC	ES
8	Control Systems	Mathematics	3	1	0	4	GEC	ES
9	Power Electronics	Fundamentals of Electrical Engineering / Physics / Basic Electronics	3	1	0	4	GEC	ES

**\*ES stands for Electrical System. Students aspiring for minor specialization in ES shall have to earn 12 additional credits from the basket of 10 electives courses.**